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Filed : January 15, 2004

### REMARKS

The following remarks are responsive to the January 26, 2006 Final Office Action. Claims 1, 8, 10, and 12 remain as previously presented and Claims 2-9 and 11 remain as originally filed. Thus, Claims 1-12 are presented for further consideration.

#### **Response to Rejection of Claims 1-4, 9, and 12 Under 35 U.S.C. § 102(b)**

In the January 26, 2006 Final Office Action, the Examiner rejects Claims 1-4, 9, and 12 as being anticipated by U.S. Patent No. 5,691,978 issued to Kenworthy ("Kenworthy").

#### Claim 1

As previously presented, Claim 1 recites (emphasis added):

1. A transceiver comprising:
  - a receiver receiving a signal and generating **a receiver signal having a receiver bandwidth;**
  - a receiver direct converter translating the receiver signal to a baseband of the receiver signal and digitizing the translated, receiver signal;
  - an adaptive canceller comprising a reference direct converter, the reference direct converter outputting a digitized transmit signal reference of a spectral energy of a transmitter, **the digitized transmit signal reference having the receiver bandwidth;** and
  - a matched filter, wherein the receiver direct converter, the reference direct converter, and the matched filter suppress the spectral energy of the transmitter from the receiver signal.

As described in the present application at paragraph [0060], referring to Figure 5A, "The transfer function  $H_{REF}(\omega)$ , of the reference bandpass filter 236 preferably matches the transfer function  $H_{RX}(\omega)$ , of the receiver bandpass filter 214." Thus, the present application teaches that in certain embodiments, the digitized transmit signal reference has the same bandwidth as the receiver bandwidth of the receiver signal.

However, Applicant submits that Kenworthy does not disclose a "reference direct converter outputting a digitized transmit signal reference of a spectral energy of a transmitter, the digitized transmit signal reference having the receiver bandwidth," as recited by Claim 1.

In the January 26, 2006 Final Office Action, the Examiner cites various passages of Kenworthy in arguing that Kenworthy discloses all the limitations of Claim 1. However, Applicant respectfully submits that the passages of Kenworthy cited by the Examiner do not disclose what the Examiner states they disclose. For example, Kenworthy at column 3, lines 52-55 discloses:

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Referring to FIG. 3, the reference input 19 of the transmitted signal, from the transmit baseband section or, alternatively, through a receiver, is provided to the adaptive filter reference input.

Because the reference input 19 is taken from the output of the baseband modulator 11, this passage of Kenworthy discloses that the reference input 19 is a modulated signal, not a baseband signal. This interpretation is supported by Kenworthy at column 2, lines 34-37 which discloses that "a signal from a transmit source (not shown) is input to a conventional modulator 11 to produce a modulated signal 14," and Figure 5A of Kenworthy shows that reference input 19 is taken from the modulated signal 14. Therefore, the digitized reference input 19 of Kenworthy is not a "digitized baseband signal" as stated by the Examiner.

In addition, Kenworthy at column 3, lines 43-47 discloses that to produce the received signal 26 that is provided as input to the digital adaptive baseband canceller 27:

the signal from the receive antenna is passed through the receiver 25 and downconverted to either in-phase and quadrature phase (I&Q) baseband data, or a low frequency intermediate frequency (IF) suitable for digital processing.

This passage of Kenworthy discloses that the received signal is downconverted to baseband data, but does not disclose that this received signal 26 has the same bandwidth as does the reference input 19. Furthermore, neither of the passages cited by the Examiner, nor any other portion of Kenworthy, discloses that the "baseband signal of the transmitter and the baseband signal of the receiver have the same bandwidth" as stated by the Examiner.

As the Examiner correctly states in the January 26, 2006 Final Office Action, the present application teaches that the digitized transmit reference signal has a bandwidth equivalent to the bandwidth of the received baseband signal. However, the Examiner also states on page 2 of the January 26, 2006 Final Office Action that:

it would have been obvious to one skilled in the art at the time the invention was made that since baseband signal of the transmitter and the baseband signal of the receiver have the same bandwidth, that the digitized transmit reference signal (Fig. 1, element 19) has the receiver bandwidth since it is the digitized baseband signal from the transmitter.

Applicant notes that Claim 1 is rejected under 35 U.S.C. § 102(b) for anticipation, not under 35 U.S.C. § 103(a) for obviousness. To the extent that the Examiner's statement is arguing that Claim 1 is also obvious in view of Kenworthy, Applicant submits that Kenworthy does not disclose all the limitations of Claim 1, as discussed above, and that the Examiner has not provided a motivation in the prior art to provide this limitation. Furthermore, any reliance by the

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Examiner for supporting the rejection of Claim 1 on the teaching of the present application that the digitized transmit signal reference has the same bandwidth as the receiver signal would be impermissible hindsight. *See, e.g., In re McLaughlin*, 443 F.2d 1392, 1395, 170 U.S.P.Q. 209, 212 (C.C.P.A. 1971); M.P.E.P. Section 2145, part X.A., page 2100-168, Rev. 3, August 2005.

For at least the foregoing reasons, Applicant submits that Claim 1 is patentably distinguished over Kenworthy, and Applicant respectfully requests that the Examiner withdraw the rejection of Claim 1 and pass this claim to allowance.

#### Claims 2-4 and 9

Each of Claims 2-4 and 9 depends from Claim 1, so each of Claims 2-4 and 9 includes all the limitations of Claim 1, as well other limitations of particular utility. For at least the reasons stated above with regard to Claim 1, Applicant submits that each of Claims 2-4 and 9 is patentably distinguished over Kenworthy. Applicant respectfully requests that the Examiner withdraw the rejections of Claims 2-4 and 9 and pass these claims to allowance.

#### Claim 12

As previously presented, Claim 12 recites (emphasis added):

12. A transceiver comprising:
  - a duplexer coupled to an antenna;
  - a receiver having a receiver bandwidth, wherein the receiver receives a first signal from the duplexer, **the first signal having the receiver bandwidth;**
  - a transmitter sending a second signal to the duplexer, **the second signal having the receiver bandwidth;** and
  - an adaptive, digital, coherent spectral canceller coupled to the receiver and the transmitter, the canceller attenuating a signal spectrum leakage of the second signal within the receiver bandwidth.

For reasons similar to those discussed above with respect to Claim 1, Applicant submits that Claim 12 includes limitations which are not disclosed by Kenworthy. Therefore, Applicant submits that Claim 12 is patentably distinguished over Kenworthy. Applicant respectfully requests that the Examiner withdraw the rejection of Claim 12 and pass this claim to allowance.

#### **Response to Rejection of Claims 5-7 Under 35 U.S.C. § 103(a)**

In the January 26, 2006 Final Office Action, the Examiner rejects Claims 5-7 under 35 U.S.C. § 103(a) as being unpatentable over Kenworthy. Each of Claims 5-7 depends from Claim 1, so each of Claims 5-7 includes all the limitations of Claim 1, as well as other limitations of particular utility. Therefore, for at least the reasons stated above with regard to Claim 1,

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Applicant submits that each of Claims 5-7 is patentably distinguished over Kenworthy. Applicant respectfully requests that the Examiner withdraw the rejections of Claims 5-7 and pass these claims to allowance.

**Response to Rejection of Claim 8 Under 35 U.S.C. § 103(a)**

In the January 26, 2006 Final Office Action, the Examiner rejects Claim 8 under 35 U.S.C. § 103(a) as being unpatentable over Kenworthy in view of U.S. Patent No. 5,396,571 issued to Yedid et al. ("Yedid"). Applicant submits that Yedid does not disclose or suggest the limitations of Claim 1 which are not disclosed or suggested by Kenworthy. Therefore, Claim 1 is patentably distinguished over Kenworthy in view of Yedid.

Claim 8 depends from Claim 1, so Claim 8 includes all the limitations of Claim 1, as well as other limitations of particular utility. Therefore, for at least the reasons stated above with regard to Claim 1, Applicant submits that Claim 8 is patentably distinguished over Kenworthy in view of Yedid. Applicant respectfully requests that the Examiner withdraw the rejection of Claim 8 and pass this claim to allowance.

**Response to Rejection of Claims 10 and 11 Under 35 U.S.C. § 103(a)**

In the January 26, 2006 Final Office Action, the Examiner rejects Claims 10 and 11 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,596,439 issued to Dankberg et al. ("Dankberg") in view of Kenworthy.

Claim 10

As previously presented, Claim 10 recites (emphasis added):

10. A method of attenuating a transmitter signal spectrum within a bandwidth of a receiver, the method comprising:

digitizing a received signal from a receiver, **the received signal having a receiver bandwidth**, the received signal corrupted by components of a transmit signal;

creating a digitized reference transmit signal of the transmit signal, **the digitized reference transmit signal having the receiver bandwidth**;

aligning the digitized reference transmit signal in amplitude, phase and time delay with the digitized received signal;

subtracting the digitized reference transmit signal from the digitized received signal to form a residue; and

suppressing a transmitter spectral signal power from the residue within the receiver bandwidth.

Applicant submits that Claim 10 includes limitations which are not disclosed by Dankberg in view of Kenworthy. For example, Applicant submits that Dankberg does not

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disclose or suggest "the digitized reference transmit signal having the receiver bandwidth," as recited by Claim 10. As discussed above, Kenworthy also does not disclose or suggest this limitation of Claim 10. Therefore, Claim 10 is patentably distinguished over the combination of Dankberg in view of Kenworthy. Applicant respectfully requests that the Examiner withdraw the rejection of Claim 10 and pass this claim to allowance.

Claim 11

Claim 11 depends from Claim 10, so Claim 11 includes all the limitations of Claim 10, as well as other limitations of particular utility. Therefore, for the above stated reasons with regard to Claim 10, Applicant submits that Claim 11 is patentably distinguished over Dankberg in view of Kenworthy. Applicant respectfully requests that the Examiner withdraw the rejection of Claim 11 and pass this claim to allowance.

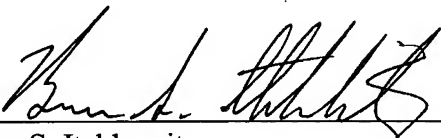
**Summary**

For the foregoing reasons, Applicant submits that Claims 1-12 are in condition for allowance, and Applicant respectfully requests such action.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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